

Appendix B

Relevant Legislation

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1. Relevance Of Legislation To ITS Benefit Assessment Framework

There is a real need to develop transportation systems that can manage vehicle miles traveled (VMT) in an effort to control emissions, given the requirements established by law for areas in non-attainment with national ambient air quality standards. With the advent of the Intermodal Surface Transportation Efficiency Act, and funding for ITS operational studies, metropolitan planning organizations (MPOs) wanting to incorporate ITS projects into transportation implementation programs (TIP) and regional transportation plans (RTP), will need state-of-art tools to quantify and predict the impact of different ITS user services. These tools will enable MPOs to assess the impact of ITS user services to ensure that reductions in VMT predicted for projects included in a TIP, for instance, are in conformity with state implementation plans (SIR) and the regional transportation plans (RTP).

The Federal Clean Air Act of 1990 and the California Clean Air Act created many new analysis requirements that can be addressed by MPOs through the use of transportation models. These new requirements include:

- the development, forecasting and tracking of emission inventories,
- the ability to forecast and track VMT,
- the ability to evaluate the impact of implementing transportation control measures (TCMs), and
- the ability to produce comparable model estimates to determine conformity among the TIP, the RTP and the SIP.

A transportation model framework capable of measuring the impacts of ITS user services is desirable to identify which of the ITS services are producing the most cost effective benefits. It is important that these user services be identified so that ISTEA funding can be allocated to those projects that can produce the maximum benefit. In addition, it is necessary to identify specific ITS user services that are not effective in producing benefits so that future strategic plans can be revised to refine the allocation of ITS research and deployment funding.

2. Relevant Legislation

Since 1990 several events have occurred to stimulate interest in Intelligent Transportation Systems (ITS) and have created the incentive for investment, research and operational testing of ITS user services. These events include the passing of the Federal Clean Air Act Amendments of 1990 (CAAA), the passing of the Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA) and legislation in several states, such as California, Florida and Washington, establishing stringent state air quality and congestion management standards. As a result, several ITS user services have been developed, implemented and tested.

There are three approaches typically used to enhance traveler mobility and are; (a) increasing network capacity, (b) reducing demand or by (c) implementing ITS technology.' It is no longer feasible to increase traffic capacity solely by constructing new facilities. First, it is far too costly to build all of the new facilities that would be required and secondly, the CAAA limits construction of facilities that produce additional mobile emissions by accommodating more vehicles. Mobile emissions are a leading cause of non-attainment of CAAA air quality standards. Another approach to enhance traveler mobility is by the reduction of demand for transportation resources. This however, is not seen as a viable alternative since demand for transportation capacity is predicted to steadily increase over the next three decades. Therefore, the development of ITS is rapidly becoming a priority in the transportation field because ITS offers a way to accommodate the growing demand for service on transportation facilities with a fixed capacity.

ISTEA provides funding for the research of ITS user services and the development of an infrastructure to deploy ITS. In addition, ISTEA prompted the creation of IVHS America as the national clearinghouse for ITS information and the development of the Strategic Plan for Intelligent Vehicle Highway Systems in the United States. A Strategic Plan was created by IVHS America and issued in May 1992. The Strategic Plan guides development and implementation of ITS user services over a twenty year period, establishes a set of program goals, and defines a time frame for completion of the goals. Progress is monitored annually, in accordance with the Strategic Plan, by Congress.

A description of CAAA, ISTEA and other relevant state legislation is included in the following sections. The relevance of CAAA and ISTEA to one another is discussed, and the importance of state legislation effecting transportation modeling is also identified.

1. IVHS America. Strategic Plan for Intelligent Vehicle Highway Systems in the United States. Report No.: IVHS-AMER-92-3. Washington, D.C.: IVHS America, May 20, 1992.

2.1 The Clean Air Act Amendments Of 1990 (CAAA)

The CAAA outlines procedures for attaining and maintaining national ambient air quality standards (NAAQS) for six pollutants; ozone, carbon monoxide, particulate matter, lead, sulfur dioxide, and nitrogen dioxide. The CAAA modifies the approach for attaining these air quality standards by requiring that:

- clean air becomes an important factor in regional land use and transportation planning, and
- non-attainment regions make immediate efforts to reduce air pollution, even before a program to meet federal standards is actually implemented, and
- non-attainment areas comply with specific mandatory measures to avoid federal sanctions.*

Carbon monoxide (CO) is a mobile source emission. Ozone is formed when non-methane hydrocarbons (NMHC) and nitrogen oxide (NO_x) combine which are both mobile source emissions. The rate at which NMHC and NO_x combine to form ozone will vary depending on several parameters such as weather and temperature. The CAAA defines five categories of non-attainment areas for ozone and two categories of non-attainment areas for carbon monoxide.³ The non-attainment areas are categorized according to the severity with which they deviate from current federal standards.

The boundaries of a non-attainment area located within a metropolitan statistical area (MSA) are the boundaries of the MSA, unless otherwise specified by the Environmental Protection Agency (EPA). Exceptions are made only when it can be shown that certain areas in the MSA do not contribute significantly to the violation of national ambient air quality standards.

The CAAA reinforces the State Implementation Plan (SIP) process established by the original Clean Air Act. The SIP is an inventory of emissions control strategies and transportation control measures (TCMs) that when implemented are predicted to enable the non-attainment area to be in compliance with CAAA standards within the required time period.⁴ The SIP estimates the emissions reduction associated with each TCM so that the reduction from the implementation of all of the TCMs will meet federal standards

2. Bosley, John J. Letter to Stuart A. Freudberg, Robert E. Griffiths and Ronald F. Kirby regarding Clean Air Act Amendments of 1990 Major Provisions Concerning Non-Attainment Areas, November 26, 1990.

3. State and Local Territorial Air Pollution Program Administrators and Association of Local Air Pollution Control Officers. "The Clean Air Act Amendments of 1990." Edited and summarized by S. Rogelberg, MTC staff. Oakland, California: MTC, n.d.

4. Bosley, John J. Letter to Stuart A. Freudberg, Robert E. Griffiths and Ronald F. Kirby regarding Clean Air Act Amendments of 1990 Major Provisions Concerning Non-Attainment Areas, November 26, 1990.

and the effectiveness of each measure can be monitored. Several government agencies are responsible for jointly developing and periodically revising a SIP for all non-attainment areas. These agencies include states and local governments, state transportation planning agencies, metropolitan planning organizations (MPO), state air quality organizations, and organizations responsible for air quality maintenance planning.

The CAAA establishes the following three basic planning requirements:

1. The SIP must include enforceable limitations, timetables and schedules to meet federal attainment standards. The SIP must also include a contingency plan from which to replace any ineffective elements.
2. The SIP requires that appropriate systems be established to generate air quality data and that the data be made available to the EPA. In addition, the SIP must include a program to improve the monitoring of air quality in non-attainment areas.
3. The SIP requires that all existing implementation plan provisions be approved for an area, unless the EPA states otherwise. Likewise, all measures in the SIP must be fully implemented by the states.

The CAAA requires that several transportation parameters be analyzed periodically in ozone non-attainment areas categorized as serious to verify that the assumptions made in the area's demonstration of attainment in the SIP are on target. If analysis of the parameters, such as aggregate VMT, aggregate emissions, and congestion levels, indicates that estimates are not consistent with attainment requirements, a revised SIP must be submitted. The revised SIP must contain transportation control measures capable of reducing emissions by the required amounts.

It is necessary that all transportation plan decisions, made for a non-attainment area, be consistent with achieving the target emission levels for each mobile source pollutant identified in the SIP. To ensure this, the CAAA establishes more stringent requirements for compatibility between MPO highway and transit projects with the SIP. Projects not compatible with the SIP are ineligible for federal funding grants. As a result of CAAA, regional transportation plans (RTPs) and transportation implementation programs (TIPs) developed by MPOs must be part of the regional transportation control strategy and must be reviewed to ensure conformity with the SIP.

The TIP is a program or schedule of intended transportation improvements (or continuation of current activities), usually covering a three to five year period, developed as part of the process for applying for federal funds from the Federal Highway Administration or the Urban Mass Transportation Administration, which is now called

the Federal Transit Administration.⁵ Typically these agencies will not allocate funds without accepting the TIP, which must be in conformity with the SIP. Likewise, projects in the TIP must also be consistent with, and included in, the Regional Transportation Plan (RTP), which is typically developed by the MPO.

The RTP is a long term projection of transportation improvements for a region. The RTP must also conform with the SIP. Sanctions will be applied to any state that either does not submit a SIP, submits a SIP that is not approved by the EPA, does not implement all SIP provisions or does not make all required submissions.

For an RTP to be in conformance with the SIP, the following conditions must be agreed upon by both the MPO and Department of Transportation (DOT):⁶

- 1) National ambient air quality standards defined in the CAAA can be achieved and maintained by implementing the RTP.
- 2) No elements of the RTP should conflict with any SIP requirements.
- 3) All TCMs identified in the SIP must be addressed immediately by the RTP.
- 4) It must be determined, either qualitatively or quantitatively, that implementation of the RTP will reduce ozone and carbon monoxide emissions in the non-attainment area. Quantitative determination will typically require modeling estimates of VMT to be generated, from which an emissions model can determine pollutant levels.
- 5) Implementation of the RTP cannot worsen either the frequency or the severity of the violation of national ambient air quality standards for the non-attainment area.

2.2 State Legislation

Several states have passed air quality and transportation legislation that is frequently more stringent than existing federal legislation. Some states have enacted their own Air Quality Acts, others have implemented Congestion Management Plans, and some states, like California, have implemented both. To provide an example of existing state legislation, the following programs are described in this section:

- The Washington Clean Air Act (Washington State),
- Local Government Comprehensive Planning and Land Development Regulation Act of 1985 (Florida),

5. U.S. Environmental Protection Agency and U.S. Department of Transportation. Guidance for Determining Conformity of Transportation Plans, Programs and Projects with Clean Air Act Implementation Plans During Phase I of the Interim Period. Washington, D.C.: U.S. Environmental Protection Agency.

6. Brooks, Jeffrey R. Letter to John J. Debolske regarding RTP Checklist, August 20, 1991.

- The California Clean Air Act, and
- The California Congestion Management Plan.

2.2.1 The Washington Clean Air Act

The purpose of the Washington Clean Air Act is to establish public policy ensuring the protection, preservation and enhancement of air quality in the State of Washington.⁷ The Act was intended to protect human health and safety by maintaining healthy air quality standards and by complying with federal air quality standards defined in the CAAA. The Washington Clean Air Act also seeks to preserve the visual beauty of the state by controlling the effects and growth of air pollution. To do this, the Act defines an intensive and progressive program of air pollution control and prevention. The Act facilitates coordination and cooperation among state, local and regional units of government in administering the program and encourages improved cooperation between these government entities and the federal government and between public and private organizations. The Act assigns state agencies the responsibility of incorporating air pollution goals into their directives and missions. The following major issues are addressed in the Act:

- Areas with poor air quality must be in conformance by December 31, 1995.
- The Act was intended to prevent areas in conformance with federal standards from becoming non-conforming areas.
- Air pollution control strategies that have minimal negative impact on the environment are given priority over strategies that produce significant negative environmental impacts.
- The Act stipulates that energy efficiency and conservation are factors contributing to decisions regarding the selection and implementation of air pollution control strategies.
- The Act mandates that the cost of operating air pollution control programs be shared by all the sources whose emissions cause air pollution.
- The Act stipulates that regional air pollution control strategies be encouraged and supported because they contribute to the maintenance of appropriate levels of air quality.
- The Act addresses the political concerns resulting from the regional or interjurisdictional nature of air pollution issues.

⁷ Chapter 70.94 RCW. Washington Clean Air Act.

- The Act identifies that the aggregate contribution of small individual sources of emissions is substantial and mandates significant emission reductions from those sources.

2.2.2 Local Government Comprehensive Planning and Land Development Regulation Act of 1985 (Florida)

This legislation, Chapter 163 of the Florida Statutes, is referred to as the state rule on Concurrency Management.⁸ Concurrency Management requires local comprehensive plans to be consistent with the appropriate comprehensive regional policy plan and the State Comprehensive Plan. Concurrency Management also defines the major role of local governments in meeting the goals and policies of the respective plans. Concurrency Management was created to ensure that adequate public facilities are provided by managing the concurrency impacts of new development. Standards were established in the following areas:

- The Traffic Circulation Element defines the future goals, objectives and policies of the transportation system in a jurisdiction in an effort to create and plan for a desirable transportation system. All traffic circulation programs and activities should be directed to meet these goals and objectives. The Traffic Circulation Element requires the completion of the following analyses that support the comprehensive plan:
 - a) A level-of-service analysis must be conducted to assess system needs based on existing design capacities. This analysis indicates whether the system adequately provides for a safe and efficient roadway and identifies the need for new facilities and/or expansion of existing facilities. This analysis includes assessing current estimates of average daily traffic (ADT) and accident rates.
 - b) A level-of-service (LOS) analysis must be conducted to assess system performance given the implementation of future land uses defined in the Future Land Use Element. This test identifies any future needs to ensure compatibility with the LOS standards, improvements, and expansions defined by the Florida Department of Transportation 5-Year Transportation Plan and any relevant local or MPO plans.
- The Mass Transit Element, implemented in cities with populations greater than fifty thousand, presents a set of goals defining the future direction of mass transit programs and activities. Mass transit service is assessed to

⁸ Florida Department of Community Affairs. Chapter 9J-5, Florida Administrative Code, Minimum Criteria for Review of Local Government Comprehensive Plans and Determination of Compliance, adopted February 14, 1986 and amended September 30, 1986.

determine if it is efficient, safe, convenient and accommodating in terms of serving both existing and proposed trips, providing adequate terminals and meeting customer needs. The Mass Transit Element coordinates any transit-related plan with the appropriate government agency to ensure conformity with the Florida Department of Transportation 5-Year Transportation Plan. This element includes the establishment of both LOS standards for transit and measures to acquire and preserve existing and future rights-of-way and exclusive corridors for transit.

- . The Sanitary Sewer, Solid Waste, Drainage, Potable Water and Natural Groundwater Aquifer Recharge Element identifies how local governments address these facilities. Several analyses must be performed to determine facility needs for existing and projected sanitary sewer, solid waste, drainage and potable water. The tests must indicate the general performance of the facilities based on the level of service they provide, their general condition, their expected life, and the impact of the facilities on adjacent natural resources.
- . The Recreation and Open Space Element requires the identification of all existing public and private recreation sites and open spaces available to the public. The element also requires that all types of use or types of recreation facilities, on the sites be identified including natural reservations, parks, playgrounds, parkways, and beaches. This element defines the long-term goals upon which all recreation and open space programs will be based, and addresses both the existing and future needs for recreation space based on demand, availability, and need. The long-term goals address such issues as public access, coordination of public and private resources, provision and maintenance of adequate facilities, and the specification of LOS standards in local land development regulations.

Standards were also developed for housing, future land use and capital improvements. These elements contribute to Concurrency Management indirectly by defining the future development, land use and housing projections to which the rule applies, funding available to implement it, and the timeframe for completion.

2.2.3 The California Clean Air Act

The California Clean Air Act (CCAA) requires that an air quality plan be developed for all areas not meeting state air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide pollutants. Unlike the Federal CAAA, the CCAA does not establish standards for particulate matter and lead. Similar to the CAAA, the CCAA classifies non-attainment areas according to the degree of the non-attainment severity. The air quality plans developed for non-attainment areas must include a variety of control

measures, including transportation control measures (TCMs), for which the CCAA creates performance standards.⁹ Transportation controls are adopted and implemented explicitly by air pollution control districts. However, the air districts may delegate the responsibility of developing the transportation measures to other regional agencies.

The CCAA identifies a list of reasonably available transportation control measures that includes both regulatory measures and transportation system improvements. Regulatory measures include trip reduction rules for employers and for indirect sources (land uses that attract a large number of vehicle trips, such as a shopping center), and management of parking supply and pricing. Transportation system improvements include establishing preferential measures such as HOV plans, improving bus and rail transit service, and implementing policies for new development requiring a reduction in vehicle trips and increased access to transit service.¹⁰

To significantly curb growth in vehicle trips, the CCAA identifies an average vehicle occupancy rate that must be obtained during peak commute hours in non-attainment areas classified as serious. In addition, the CCAA sets a time limit on growth in vehicle emissions and enables the air districts to set emission reduction targets. The CCAA provides guidance for evaluating the effectiveness of transportation measures and the plan as a whole so that progress can be monitored. Finally, the CCAA requires that public education efforts be made to gain public support.

2.2.4 California Congestion Management Program

California's Congestion Management Program (CMP) is implemented at the county level and facilitates the relationship between land use, transportation and air quality so that increased mobility, clean air and appropriate land use can be achieved.¹¹ The CMP includes a single seven year capital improvement program designed to ensure that applicable counties achieve and maintain specific LOS standards, mitigate adverse land use impacts and improve air quality. Statutory requirements of a CMP are applicable to all counties containing an urbanized area with populations greater than 50,000. Funding for local projects is contingent upon inclusion in the CMP. Likewise, the CMP must conform with the Regional Transportation Plan (RTP).

The CMP calls for the formation of county-wide Congestion Management Agencies (CMAs) to fulfill CMP requirements. The CMA is responsible for developing the procedures and programs necessary to meet the requirements of the legislation. Because

9 California Air Resources Board. Transportation Performance Standards of the California Clean Air Act. Sacramento, California: California Air Resources Board, May 1991.

10 National Association of Regional Councils (NARC). Draft NARC "Best Practices Manual. Washington, D.C.: National Association of Regional Councils, June 29, 1992.

11 Congestion Management Program Resource Handbook. N.p., November 1990.

many **CMP** requirements are actually implemented by counties, cities and transportation agencies instead of the CMA, the CMA must monitor those agencies to ensure conformance with the CMP.

The CMP requires that a system, including at least all state highways and principal arterials, be defined, and that the actual level of service of the roads in the system be assessed and compared with level of service standards established by the CMP. A deficiency plan must be developed by the city, county or responsible agency to help roadways with levels of service that fall below the LOS standard or to improve overall CMP system performance and air quality. The CMP also establishes service standards for transit service.¹²

The CMP requires that trip reduction programs and travel demand management (TDM) programs be implemented. These programs typically involve instituting trip reduction ordinances requiring employers to reduce drive-alone vehicle trips by offering incentives for employees to use other transportation options, including ridesharing, carpooling, vanpooling or rail transit. Similarly, the CMP requires that any adverse impacts on the transportation system resulting from local land use decisions be analyzed and the cost of mitigating these impacts be determined.

2.3 The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)

Clean air is an integral part of two programs created by ISTEA; the Congestion Mitigation and Air Quality Improvement Program (CMAQ), and the Intelligent Vehicle Highways Systems (IVHS) Act of 1991. The CMAQ allocates a total of \$6 billion over a six year period to transportation programs and projects that contribute to attainment of the NAAQS defined in the CAAA. Similarly, the IVHS program earmarks a total of \$659 million for the operational testing of projects that may contribute to a reduction in emissions.¹³

One of the goals of the IVHS legislation is to facilitate the attainment of air quality goals established by the CAAA by making more efficient use of the nation's federal-aid highway system. The IVHS legislation guides the development and promotion of ITS in the United States by establishing compatible standards for ITS technologies and defining evaluation guidelines for ITS operational tests. The IVHS legislation is facilitated by the establishment of IVHS America, a national clearinghouse for ITS information, and the development of The Strategic Plan for Intelligent Vehicle Highway Systems, which was submitted by IVHS America to Congress in May 1992. The Strategic Plan defines the

¹² Californians for Better Transportation (CBT) and the Bay Area Council. Congestion Management Programs: Theory Hits the Streets. N.p., January 1992.

¹³ H.R. 2950, 102D Cong. 1st session. Intermodal Surface Transportation Efficiency Act. October 25, 1991.

future course of ITS in the near term (5 year time frame), middle term (10 year time frame), and longer term (20 year time frame) for the following five components of the National ITS Program:

- Advanced Traffic Management Systems (ATMS),
- Advanced Traveler Information Systems (ATIS),
- Advanced Public Transportation Systems (APTS),
- Advanced Vehicle Control Systems (AVCS), and
- Commercial Vehicle Operations (CVO).

An annual report monitoring the status of ITS work relative to the Strategic Plan is required by Congress. The annual status report must include an analysis of the accomplishments of ITS technology in producing benefits in terms of congestion, safety, environmental, and energy conservation.¹⁴

The IVHS legislation establishes specific milestones for the operational testing of ITS user services. Specifically, the legislation calls for a prototype fully-automated highway and vehicle system to be operational by the end of 1997. The development of the automated highway will incorporate a study of human factors to gain a better understanding of the man-machine relationship. Previous operational tests of ITS user services have demonstrated that human factor issues significantly impact the effectiveness of ITS user services in producing benefits. Recommendations for amendments to the Strategic Plan will be developed if non-technical problems and/or constraints are encountered in work dealing with ITS.

ISTEA establishes communication channels between state and local governments and the Secretary of Transportation (the Secretary) through which planning, technical assistance, and funding for feasibility and planning studies for the development and implementation of ITS user services are provided. (State and local governments include any interagency traffic and incident management entity.) ISTEA also earmarks funds for operational testing of ITS by non-federal entities. Funding priority is given to projects that meet ITS goals (defined in ISTEA), minimize the percentage of federal contributions, and builds upon the knowledge and results gained from previous work.

The main funding category for ITS under ISTEA is the ITS Corridors Program, which identifies a few specific priority corridors for a majority of funding and allocates the remaining funds to other corridors and areas not yet designated. Fifty percent or more of

¹⁴ IVHS America. Strategic Plan for Intelligent Vehicle Highway Systems in the United States. Report No.: IVHS-AMER-92-3. Washington, D.C.: IVHS America, May 20, 1992.

the funding for the ITS Corridors Program will be allocated to less than 10 priority corridors that are designated by the Secretary. Eligible state or local entities will be provided with financial and technical assistance by the Secretary for the development and implementation of ITS user systems in these corridors. The priority corridors must have the following characteristics:

- Significant traffic density,
- Severe or extreme ozone non-attainment under the Clean Air Act,
- Many types of transportation facilities, including highways, bridges, tunnels, and toll facilities,
- Inability to expand capacity of surface street facilities,
- Mix of passenger, transit and commercial motor carrier traffic,
- Complex traffic patterns, and
- Contribution to Strategic Plan.

After funds have been allocated to the priority corridors, the balance of funds will be distributed to eligible state and local entities for the application of ITS user services in other corridors or areas not designated by the Secretary. The corridors will be selected based on the potential for ITS user services to produce any of the following operational benefits:

- Improved operational efficiency,
- Reduced regulatory burden,
- Improved commercial productivity,
- Improved safety, and
- Enhanced motorist and traveler performance.

Funding for the ITS Corridors Program, including both priority and other corridors, accounts for 75 percent of the total \$660 million earmarked by ISTEA for a six year period. Specifically, \$71 million is allocated for the ITS Corridors Program for 1992, while \$86 million is designated for each year from 1993 through 1997. Of these funds, at least five percent must be allocated to innovative, high-risk operational or analytical tests that have significant potential to meet the long term (20 year time frame) goals of the Strategic Plan.

Aside from the funds designated under the ITS Corridors Program, a total of \$164 million from the Highway Trust Fund (\$24 million for 1992 and \$28 million for 1993 through 1997) is earmarked for other ITS activities. Unless the Secretary makes an exception for high-risk, innovative projects, the Federal share payable for all activities shall not exceed 80 percent.

2.3.1 Intelligent Vehicle-Highway Systems Act¹⁵

SEC. 605 1. SHORT TITLE.

This part may be cited as the “Intelligent Vehicle-Highway Systems Act of 1991”.

SEC. 6052. ESTABLISHMENT AND SCOPE OF PROGRAM.

- (a) Establishment.-Subject to the provisions of this part, the Secretary shall conduct a program to research, develop, and operationally test intelligent vehicle-highway systems and promote implementation of such systems as a component of the Nation’s surface transportation systems.
- (b) Goals.-The goals of the program to be carried out under this part shall include, but not be limited to-
 - (1) the widespread implementation of intelligent vehicle-highway systems to enhance the capacity, efficiency, and safety of the Federal-aid highway system and to serve as an alternative to additional physical capacity of the Federal-aid highway system;
 - (2) the enhancement, through more efficient use of the Federal-aid highway system, of the efforts of the several States to attain air quality goals established pursuant to the Clean Air Act;
 - (3) the enhancement of safe and efficient operation of the Nation’s highway systems with a particular emphasis on aspects of systems that will increase safety and identification of aspects of the system that may degrade safety;
 - (4) the development and promotion of intelligent vehicle-highway systems and an intelligent vehicle-highway systems industry in the United States, using authority provided under section 307 of title 23, United States Code;
 - (5) the reduction of societal, economic, and environmental costs associated with traffic congestion;
 - (6) the enhancement of United States industrial and economic competitiveness and productivity by improving the free flow of people and commerce and by

¹⁵ This Act is part of the INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT OF 1991, Title VI -Research, Part B.

establishing a significant United States presence in an emerging field of technology;

- (7) the development of a technology base for intelligent vehicle-highway systems and the establishment of the capability to perform demonstration experiments, using existing national laboratory capabilities where appropriate; and
- (8) the facilitation of the transfer of transportation technology from national laboratories to the private sector.

SEC. 6053. GENERAL AUTHORITIES AND REQUIREMENTS.

- (a) Cooperation.-In carrying out the program under this part, the Secretary shall foster use of the program as a key component of the Nation's surface transportation systems and strive to transfer federally owned or patented technology to State and local governments and the United States private sector. As appropriate, in carrying out the program under this part, the Secretary shall consult with the Secretary of Commerce, the Administrator of the Environmental Protection Agency, the Director of the National Science Foundation, and the heads of other interested Federal departments and agencies and shall maximize the involvement of the United States private sector, colleges and universities, and State and local governments in all aspects of the program, including design, conduct (including operations and maintenance), evaluation, and financial or in-kind participation.
- (b) Standards.-The Secretary shall develop and implement standards and protocols to promote the widespread use and evaluation of intelligent vehicle-highway systems technology as a component of the Nation's surface transportation systems. To the extent practicable, such standards and protocols shall promote compatibility among intelligent vehicle-highway systems technologies implemented throughout the States. In carrying out this subsection, the Secretary may use the services of such existing standards-setting organizations as the Secretary determines appropriate.
- (c) Evaluation Guidelines.-The Secretary shall establish guidelines and requirements for the evaluation of field and related operational tests carried out pursuant to section 6055. Any survey, questionnaire, or interview which the Secretary considers necessary to carry out the evaluation of such tests shall not be subject to the requirements of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.).
- (d) Information Clearinghouse.-
 - (1) Establishment.-The Secretary shall establish and maintain a repository for technical and safety data collected as a result of federally sponsored projects carried out pursuant to this part and shall make, upon request, such information (except for proprietary information and data) readily available to all users of the repository at an appropriate cost.

- (2) Delegation of authority.-The Secretary may delegate the responsibility of the Secretary under this subsection, with continuing oversight by the Secretary, to an appropriate entity not within the Department of Transportation. If the Secretary delegates such responsibility, the entity to which such responsibility is delegated shall be eligible for Federal assistance under this part.
- (e) Advisory Committees.-The Secretary may utilize one or more advisory committees in carrying out this part. Any advisory committee so utilized shall be subject to the Federal Advisory Committee Act. Funding provided for any such committee shall be available from moneys appropriated for advisory committees as specified in relevant appropriations Acts and from funds allocated for research, development, and implementation activities in connection with the intelligent vehicle-highway systems program under this part.

SEC. 6054. STRATEGIC PLAN, IMPLEMENTATION, AND REPORT TO CONGRESS.

(a) Strategic Plan-

- (1) Development and implementation.-Not later than 1 year after the date of the enactment of this Act, the Secretary shall develop, submit to Congress, and commence implementation of a plan for the intelligent vehicle-highway systems program.
- (2) Scope.-The plan shall-
 - a) specify the goals, objectives, and milestones of the intelligent vehicle-highway program and how specific projects relate to the goals, objectives, and milestones, including consideration of the 5- 10- and 20-year timeframes for the goals and objectives;
 - b) detail the status of and challenges and nontechnical constraints facing the program;
 - c) establish a course of action necessary to achieve the program's goals and objectives;
 - d) provide for the development of standards and protocols to promote and ensure compatibility in the implementation of intelligent vehicle-highway systems technologies; and
 - e) provide for the accelerated use of advanced technology to reduce traffic congestion along heavily populated and traveled corridors.
- (b) Intelligent Vehicle Highway Systems-The Secretary shall develop an automated highway and vehicle prototype from which future fully automated intelligent vehicle-highway systems can be developed. Such development shall include research in human factors to ensure the success of the man-machine relationship.

The goal of this program is to have the first fully automated roadway or an automated test track in operation by 1997. This system shall accommodate installation of equipment in new and existing motor vehicles.

(c) Implementation Reports.-

- (1) In general.-Not later than 2 years after the date of the enactment of this Act, and annually thereafter, the Secretary shall submit to Congress a report on implementation of the plan developed under subsection (a).
- (2) Scope of implementation reports-In preparing reports under this subsection, the Secretary shall-
 - a) analyze the possible and actual accomplishments of intelligent vehicle-highway systems projects in achieving congestion, safety, environmental, and energy conservation goals and objectives of the program;
 - b) specify cost-sharing arrangements made, including the scope and nature of Federal investment, in any research, development, or implementation project under the program;
 - c) assess nontechnical problems and constraints identified as a result of each such implementation project; and
 - d) include, if appropriate, any recommendations of the Secretary for legislation or modification to the plan developed under subsection (a).

(d) Nontechnical Constraints.-

- (1) Report to Congress.-In cooperation with the Attorney General and the Secretary of Commerce, the Secretary shall prepare and submit, not later than 2 years after the date of the enactment of this Act, a report to Congress addressing the nontechnical constraints and barriers to implementation of the intelligent vehicle-highway systems program.
- (2) Scope of report.-The report shall-
 - a) address antitrust, privacy, educational and staffing needs, patent, liability, standards, and other constraints, barriers, or concerns relating to the intelligent vehicle-highway systems program;
 - b) recommend legislative and administrative actions necessary to further the program; and
 - c) address ways to further promote industry and State and local government involvement in the program.
 - d) Update of report.-Not later than 5 years after the date of the enactment of this Act, the Secretary shall prepare and submit to Congress an update of the report under this subsection.

SEC. 6055. TECHNICAL, PLANNING, AND OPERATIONAL TESTING PROJECT ASSISTANCE.

- (a) Technical Assistance and Information.-The Secretary may provide planning and technical assistance and information to State and local governments seeking to use and evaluate intelligent vehicle-highway systems technologies. In doing so, the Secretary shall assist State and local officials in developing plans for areawide traffic management control centers, necessary laws pertaining to establishment and implementation of such systems, and plans for infrastructure for such systems and in conducting other activities necessary for the intelligent vehicle-highway systems program.
- (b) Planning Grants.-The Secretary may make grants to State and local governments for feasibility and planning studies for development and implementation of intelligent vehicle-highway systems. Such grants shall be made at such time, in such amounts, and subject to such conditions as the Secretary may determine.
- (c) Eligibility of Certain Traffic Management Entities.-Any interagency traffic and incident management entity, including independent public authorities or agencies, contracted by a State department of transportation for implementation of a traffic management system for a designated corridor is eligible to receive Federal assistance under this part through the State department of transportation.
- (d) Operational Testing Projects.-The Secretary may make grants to non-Federal entities, including State and local governments, universities, and other persons, for operational tests relating to intelligent vehicle-highway systems. In deciding which projects to fund under this subsection, the Secretary shall-
 - (1) give the highest priority to those projects that-
 - a) will contribute to the goals and objectives specified in plan developed under section 6054; and
 - b) will minimize the relative percentage of Federal contributions (excluding funds apportioned under section 104 of title 23, United States Code) to total project costs;
 - c) seek to fund operational tests that advance the current state of knowledge and, where appropriate, build on successes achieved in previously funded work involving such systems; and
 - d) require that operational tests utilizing Federal funds under this part have a written evaluation of the intelligent vehicle-highway systems technologies investigated and of the results of the investigation which is consistent with the guidelines developed pursuant to section 6053
 - (c).

- e) Authority To Use Funds.-Each State and eligible local entity is authorized to use funds provided under this part for implementation purposes in connection with the intelligent vehicle-highway systems program.

SEC. 6056. APPLICATIONS OF TECHNOLOGY.

- (a) IVHS Corridors Program.-The Secretary shall designate transportation corridors in which application of intelligent vehicle-highway systems will have particular benefit and, through financial and technical assistance under this part, shall assist in the development and implementation of such systems.
- (b) Priorities.-In providing funding for corridors under this section, the Secretary shall allocate not less than 50 percent of the funds made available to carry out this section to eligible State or local entities for application of intelligent vehicle-highway systems in not less than 3 but not more than 10 corridors with the following characteristics:
 - (1) Traffic density (as a measurement of vehicle miles traveled per highway mile) at least 1.5 times the national average for such class of highway.
 - (2) Severe or extreme nonattainment for ozone under the Clean Air Act, as determined by the Administrator of the Environmental Protection Agency.
 - (3) A variety of types of transportation facilities, such as highways, bridges, tunnels, and toll and nontoll facilities.
 - (4) Inability to significantly expand capacity of existing surface transportation facilities.
 - (5) A significant mix of passenger, transit, and commercial motor carrier traffic.
 - (6) Complexity of traffic patterns.
 - (7) Potential contribution to the implementation of the Secretary's plan developed under section 6054.
- (c) Other Corridors and Areas.-After the allocation pursuant to subsection (b), the balance of funds made available to carry out this section shall be allocated to eligible State and local entities for application of intelligent vehicle-highway systems in corridors and areas where the application of such systems and associated technologies will make a potential contribution to the implementation of the Secretary's plan for the intelligent vehicle-highway systems program under section 6054 and demonstrate benefits related to any of the following:
 - (1) Improved operational efficiency.
 - (2) Reduced regulatory burden,
 - (3) Improved commercial productivity.

(4) Improved safety.

(5) Enhanced motorist and traveler performance.

Such corridors and areas may be in both urban and rural areas and may be interstate and intercity corridors. Urban corridors shall have a significant number of the characteristics set forth in subsection (b).

SEC. 6057. COMMERCIAL MOTOR VEHICLE SAFETY TECHNOLOGY.

- (a) Study.-The Secretary shall conduct a study to evaluate technology which is designed for installation on a commercial motor vehicle to provide the individual operating the vehicle with a warning if a turn, lane change, or other intended movement of the vehicle by the operator will place the vehicle in the path of an adjacent object or vehicle.
- (b) Report.-Not later than 2 years after the date of the enactment of this Act, the Secretary shall transmit to the Committee on Public Works and Transportation of the House of Representatives and the Committee on Environment and Public Works of the Senate a report containing findings and recommendations concerning the study conducted under this section.

SEC. 6058. FUNDING.

- (a) IVHS Corridors Program.-There is authorized to be appropriated to the Secretary for carrying out section 6056, out of the Highway Trust Fund (other than the Mass Transit Account), \$71,000,000 for fiscal year 1992 and \$86,000,000 per fiscal year for each of fiscal years 1993 through 1997. In addition to amounts made available by subsection (b), any amounts authorized by this subsection and not allocated by the Secretary for carrying out section 6056 for fiscal years 1992 and 1993 may be used by the Secretary for carrying out other activities authorized under this part.
- (b) Other IVHS Activities.-There is authorized to be appropriated to the Secretary for carrying out this part (other than section 6056), out of the Highway Trust Fund (other than the Mass Transit Account), \$23,000,000 for fiscal year 1992 and \$27,000,000 per fiscal year for each of fiscal years 1993 through 1997.
- (c) Reservation of Funds.-Of the funds made available pursuant to subsection (a), not less than 5 percent shall only be available for innovative, high-risk operational or analytical tests that do not attract substantial non-Federal commitments but are determined by the Secretary as having significant potential to help accomplish long-term goals established by the plan developed pursuant to section 6054.
- (d) Federal Share Payable.-The Federal share payable on account of activities carried out under this part shall not exceed 80 percent of the cost of such activities. The Secretary may waive application of the preceding sentence for projects undertaken

pursuant to subsection (c) of this section. The Secretary shall seek maximum private participation in the funding of such activities.

- (e) Applicability of Title 23.-Funds authorized by this section shall be available for obligation in the same manner as if such funds were apportioned under chapter 1 of title 23, United States Code; except that the Federal share of the cost of any activity under this section shall be determined in accordance with this section and such funds shall remain available until expended. Such funds shall be subject to the obligation limitation imposed by section 102 of this Act.

SEC. 6059. DEFINITIONS.

For the purposes of this part, the following definitions apply:

- (1) IVHS.-The term “intelligent vehicle-highway systems” means the development or application of electronics, communications, or information processing (including advanced traffic management systems, commercial vehicle operations, advanced traveler information systems, commercial and advanced vehicle control systems, advanced public transportation systems, satellite vehicle tracking systems, and advanced vehicle communications systems) used singly or in combination to improve the efficiency and safety of surface transportation systems.
- (2) Corridor.-The term “corridor” means any major transportation route which includes parallel limited access highways, major arterials, or transit lines; and, with regard to traffic incident management, such term may include more distant transportation routes that can serve as viable options to each other in the event of traffic incidents.
- (3) State.-The term “State” has the meaning such term has under section 101 of title 23, United States Code.